

**Sports, exercise and health science**  
**Standard level**  
**Paper 1**

Thursday 21 May 2015 (afternoon)

45 minutes

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**Instructions to candidates**

- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.
- The maximum mark for this examination paper is **[30 marks]**.

1. What is the main function of the femur?
  - A. Support for the arm
  - B. Movement of the body
  - C. Attachment of muscles
  - D. Protection of organs
  
2. Which of the following describes the attachment of the biceps brachii to the radius?
  - I. Insertion
  - II. Origin
  - III. The attachment of a muscle to a moving bone
  - A. I only
  - B. I and II
  - C. I and III
  - D. II and III
  
3. Which muscle causes flexion of the femur at the hip?
  - A. Vastus intermedialis
  - B. Gluteus maximus
  - C. Rectus femoris
  - D. Semitendinosus
  
4. Which of the following is a/are function(s) of the conducting airways?
  - I. Provide a low resistance pathway for air
  - II. Remove the moisture from the air
  - III. Provide defence against harmful chemicals
  - A. I only
  - B. I and III only
  - C. II and III only
  - D. I, II and III

5. What is the definition of *inspiratory reserve volume (IRV)*?
- A. The volume of air in the lungs after maximal inhalation
  - B. The volume of air inspired during normal breathing
  - C. The additional inspired air over and above tidal volume
  - D. The maximum volume of air that can be inhaled after a maximal exhalation

6. Which components help to form blood plasma?

A.	water	waste products	platelets
B.	water	dissolved gases	nutrients
C.	erythrocytes	hormones	dissolved gases
D.	leucocytes	electrolytes	nutrients

7. Which of the following begins intrinsic excitation of the heart?
- A. Sinoatrial node (SA node)
  - B. Adrenaline
  - C. Chemoreceptors
  - D. Parasympathetic nervous system
8. Which are the units when measuring an athlete's blood pressure?
- A.  $\text{ml kg}^{-1} \text{min}^{-1}$
  - B.  $\text{L min}^{-1}$
  - C.  $\text{ml min}^{-1}$
  - D. mmHg

Turn over

9. An athlete is unable to train for a substantial amount of time following an injury. Which of the following will occur?
- A. A decrease in resting heart rate
  - B. A decrease in capillarization around muscle tissue
  - C. An increase in arterio-venous oxygen difference
  - D. An increase in left ventricular volume
10. Which micronutrient is a carbohydrate?
- A. Calcium
  - B. Fibre
  - C. Vitamin A
  - D. Folic acid
11. What is the correct ratio of carbon, hydrogen and oxygen in a glucose molecule?
- A. 1:2:1
  - B. 2:1:2
  - C. 2:3:2
  - D. 2:6:2
12. Which is an example of a catabolic reaction?
- A. The production of protein from amino acids
  - B. The production of glucose from glycogen
  - C. The production of ATP from ADP and P
  - D. The production of ATP without oxygen

13. What is the function of lysosomes?
- A. Manufactures proteins
  - B. Provides energy for the cell
  - C. Controls cell growth and reproduction
  - D. Digests cellular macromolecules
14. Which of the following fuels can be used by a cell to make ATP anaerobically?
- I. Glucose
  - II. Protein
  - III. Lipids
- A. I only
  - B. III only
  - C. I and III only
  - D. I, II and III
15. Which part of the motor neuron is nearest to the muscle fibre it stimulates?
- A. Axon
  - B. Dendrite
  - C. Motor unit
  - D. Motor end plate
16. Which describes the movement of depression?
- A. Movement at a joint towards the midline of the body
  - B. Movement at a joint in an inferior direction
  - C. Movement at a joint away from the midline of the body
  - D. Movement at a joint that would increase its angle

Turn over

17. Which muscle contraction occurs in the right quadriceps of the runner during the initial ground impact as he runs downhill?
- A. Concentric
  - B. Isokinetic
  - C. Isometric
  - D. Eccentric
18. A sports scientist measures the force that is being applied by a baseball into a glove and the time over which the force is being applied. Which of the following can be calculated from the measurements?
- A. Impulse
  - B. Friction
  - C. Torque
  - D. Height of release

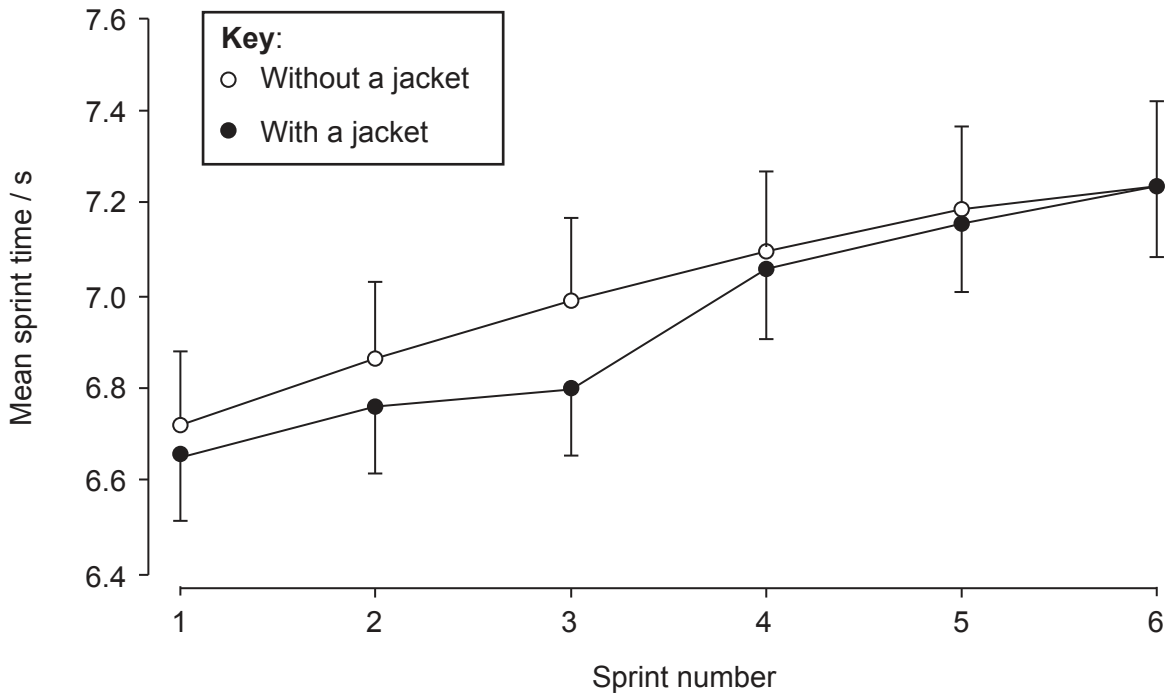
19. Which biomechanical aspect is a gymnast attempting to maximize when they tuck during a somersault?
- A. Moment of inertia
  - B. Angular momentum
  - C. Angular velocity
  - D. Bernoulli effect
20. What is the relationship between ability, skill and technique?
- A.  $\text{skill} = \text{ability} + \text{technique}$
  - B.  $\text{ability} = \text{skill} + \text{technique}$
  - C.  $\text{technique} = \text{ability} - \text{skill}$
  - D.  $\text{ability} = \text{skill} - \text{technique}$
21. Which classification system involves a number of discrete skills put together to make a sequence?
- A. Coactive
  - B. Continuous
  - C. Interactive
  - D. Serial

Turn over

- 22.** Which type of feedback is the noise that a tennis player hears as the player miss-hits the ball?
- A. Intrinsic
  - B. Extrinsic
  - C. Positive
  - D. Proprioceptive
- 23.** Which indicates a large amount of improvement occurring early in practice?
- A. Negative acceleration
  - B. Positive acceleration
  - C. Plateau
  - D. Linear
- 24.** What type of transfer is occurring when a sportsperson learns the theory about how altitude will impact on ball flight?
- A. Stage to stage
  - B. Principles to skills
  - C. Practice to performance
  - D. Abilities to skills
- 25.** Which type of practice involves the repetition of specific movement patterns?
- A. Fixed (drill)
  - B. Massed
  - C. Command
  - D. Whole



26. The graph below shows mean sprint times for subjects with and without (control) a heat maintenance jacket.



[Source: adapted from Liam P. Kilduff, Daniel J. West, Natalie Williams and Christian J. Cook (2013) 'The influence of passive heat maintenance on lower body power output and repeated sprint performance in professional rugby league players'. *Journal of Science and Medicine in Sport*, **16** (5), pp. 482–486. Copyright 2013, with permission from Elsevier.]

What is the mean sprint time for a subject with a jacket during sprint number 3?

- A. 6.7 s
  - B. 6.8 s
  - C. 6.9 s
  - D. 7.0 s
27. A subject has a variable level of motivation while completing multiple tests of the Cooper 12-minute run. Which aspect of experimental design is affected during the tests?
- A. Randomization
  - B. Blinding
  - C. Specificity
  - D. Reliability

Turn over

- 28.** Which component of fitness is tested when subjects successfully complete a handball toss?
- A. Coordination
  - B. Reaction time
  - C. Power
  - D. Balance
- 29.** Which measure of exercise intensity is specifically for children?
- A. Karvonen method
  - B. CERT scale
  - C. Training heart rate range/zone
  - D. Borg scale
- 30.** Which describes the purpose of a Physical Activity Readiness Questionnaire (PAR-Q)?
- A. To determine the intensity of exercise
  - B. To determine perceived exertion
  - C. To determine readiness to engage in physical activity
  - D. To determine attitude to exercise
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